

*What is claimed is:*

1. A flow controller for releasably blocking a flow of liquid in a flow path defined by a closed perimeter, the flow controller comprising:

5 a rigid self-supporting panel configured to overlap the closed perimeter, the panel being provided with a first hinge member configured to mount the panel in a normal orientation overlapping the closed perimeter to substantially block the flow path, the first hinge member being further configured to allow the panel to move partially from the normal orientation to release the flow of the liquid, the panel being  
10 further configured with a torque member to define an amount of a normal process force of the flow of the liquid to be substantially blocked by the panel and an amount of a hydrodynamic force of the flow of the liquid to be released by the panel.

2. A flow controller as recited in claim 1, wherein:

15 the panel has a first axis extending across a first side of the perimeter and a second axis extending along a second length of the panel, the first hinge member being parallel to the first axis, and

the torque member is located along the second axis spaced from the first axis to apply a restorative torque to the panel in opposition to the amount of the force of  
20 the flow of the liquid substantially blocked by the panel.

3. A flow controller as recited in claim 1, wherein:

the panel has a first axis extending across a first side of the perimeter and a  
second axis extending along a second length of the panel, the first hinge member  
5 being parallel to the first axis, and

the torque member is located along the second axis spaced from the first axis to  
apply a restorative torque to the panel in opposition to the amount of the force of the flow  
of the liquid released by the panel.

10 4. A flow controller as recited in claim 1, wherein:

the panel is configured with a central web surrounded by a soley-bent frame,  
the frame comprising a top section and a lower section;

the first hinge member being configured in the top section; and

the torque member being spaced from the top section and configured with a  
15 selected weight having a value adapted to define the amount of the force of the flow of the  
liquid to be substantially blocked by the panel and the amount of the force of the flow of  
the liquid to be released by the panel.

5. A flow controller as recited in claim 1, wherein:

the panel is configured with a series of offsets to define channels configured to resist the amount of the force of the flow of the liquid to be substantially blocked by the panel, the channels comprising a top channel section and a lower channel section;

5 the first hinge member being configured in the top channel section; and

the torque member being spaced from the top channel section and configured with a selected weight having a value adapted to define the amount of the force of the flow of the liquid to be substantially blocked by the panel and the amount of the force of the flow of the liquid to be released by the panel.

10 6. A flow controller as recited in claim 1, wherein:

the panel is configured with a unitary plank fabricated from redwood, the plank being configured to resist the amount of the force of the flow of the liquid to be substantially blocked by the panel, the plank comprising a top section and a lower section;

15 the first hinge member being configured in the top section; and

the torque member being spaced from the top section and configured with a selected weight having a value adapted to define the amount of the force of the flow of the liquid to be substantially blocked by the panel and the amount of the force of the flow of the liquid to be released by the panel.

7. A soley-bent baffle for controlling flow of a liquid in a flow path, the flow path defining a flow perimeter, the baffle comprising:

5 a planar flow control sheet for blocking substantially all of the liquid in the flow path, the sheet having a continuous edge corresponding to the flow perimeter, the edge being configured with at least three linear sides;

a channel defined by a series of bends and configured integral with each respective one of the sides of the sheet, each channel being configured with a first of the bends co-extensive and integral with the respective one of the sides and defining a first channel section extending perpendicular to the sheet, each channel being  
10 configured with a second bend defining a second channel section of the channel that extends parallel to the sheet and integral with the first channel section, each channel being configured with a third bend defining a third channel section of the channel that is perpendicular to the sheet and integral with the second channel section, opposite  
15 first and second ones of the sides of the sheet being provided with respective first and second ones of the channels; and

a hinge member in each second channel section of each of the first and second channels.

8. A soley-bent baffle as recited in claim 7, wherein:

each of the first and second ones of the channels has a middle equidistant from opposite sides of the sheet; and

the hinge member is located in each of the second channel sections adjacent to  
5 one of the opposite sides and spaced from the middle.

9. A soley-bent baffle as recited in claim 8, wherein:

each of the first and second ones of the channels has a middle equidistant from opposite sides of the sheet;

10 the hinge member is located in each of the second channel sections spaced from one of the opposite sides and spaced from the middle on one side of the middle; and

the soley bent baffle further comprising a torque member mounted on one of the channels that extends between the first and second opposite channels on another  
15 side of the middle.

10. A soley-bent baffle as recited in claim 9, wherein:

the torque member is configured with a weight adapted to provide a selected torque around an axis extending through the hinge members.

11. A soley-bent baffle as recited in claim 7, wherein:

each of the first and second ones of the channels has a middle equidistant from opposite sides of the sheet;

the hinge member is located in each of the second channel sections spaced  
5 from one of the opposite sides and spaced from the middle on one side of the middle;  
and

the soley bent baffle further comprising a torque member mounted on a third of the channels that extends between the first and second opposite channels on the one side of the middle, the torque member being closer to the third channel than the hinge  
10 members.

12. A soley-bent baffle as recited in claim 11, wherein:

the torque member is configured with a weight adapted to provide a selected torque around an axis extending through the hinge members.  
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13. A soley-bent baffle for controlling flow of a liquid in a flow direction of a flow path in a basin, the baffle comprising:

a flow control web configured in a single plane to releasably block substantially all of the liquid in at least a portion of the flow path, the flow control web  
20 having opposite ends and opposite sides, the ends and the sides being orthogonally oriented with respect to each other,

a first forward-J-shaped channel integral with one of the sides;

a second reverse-J-shaped channel integral with the other of the sides;

a third forward-J-shaped channel integral with one of the ends; and

a fourth reverse-J-shaped channel integral with the other of the ends;

the J-shaped channels extending from the flow control web in a common  
5 direction;

each of the third forward-J-shaped channel and fourth reverse-shaped channel  
being provided with a hinge member configured to suspend the flow control web  
across the flow direction of the flow path for pivotal movement.

10 14. A solely-bent baffle as recited in claim 13, wherein:

each of the hinge members is a hinge aperture; and

the solely-bent baffle is configured with a weight that is effective to provide a  
restorative torque around an axis extending through the hinge apertures to releasably  
urge the solely-bent baffle against the flow of the liquid.

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15. A solely-bent baffle as recited in claim 14, wherein:

the configuration of the solely-bent baffle with the weight comprises a dense  
material received in the second reverse-J-shaped channel that is integral with the other  
of the sides.

16. A soley-bent baffle for controlling flow of a liquid in a flow direction of a flow path in a basin, the flow path defining a flow perimeter, the baffle comprising:

a planar flow control sheet for blocking substantially all of the liquid in the flow path, the sheet having a continuous edge corresponding to the flow perimeter, the continuous edge being configured with at least two linear sides and at least two linear ends;

a generally J-shaped channel soley-defined by channel sections and a series of bends integral with the channel sections, one of the J-shaped channels being integral with a separate respective one of the linear sides, one of the J-shaped channels being integral with a separate respective one of the linear ends, one of the bends being co-extensive and integral with the respective one of the sides or ends and being integral with a first of the channel sections, the first channel section extending perpendicular to the sheet, a second of the bends being integral with the first channel section and with a second of the channel sections, the second channel section being parallel to the sheet, and a third of the bends being integral with the second channel section and with a third of the channel sections, the third channel section being perpendicular to the sheet;

the planar sheet and the first channel sections that are integral with respective ones of the opposite linear sides or ends defining a first channel configuration;

a portion of the planar sheet, and a respective one of the first channel sections integral with a respective one of the opposite linear sides or ends, and a respective one of the second channel sections cooperating to define a second channel configuration;

at least a portion of a respective one of the first channel sections that is integral with a respective one of the opposite linear sides or ends, and a respective one of the



second channel sections, and a respective one of the third channel sections cooperating to define a third channel configuration; and

5 a hinge member being provided in each of the second channel configurations that comprise the first channel sections integral with a respective one of the opposite ends.

17. A solely-bent baffle as recited in claim 16, wherein:

the hinge member that is provided in each of the second channel configurations that comprise the first channel sections integral with a respective one of the opposite  
10 ends comprises a hinge aperture located along the respective second channel configuration for defining an axis around which the solely-bent baffle may rotate.

18. A solely-bent baffle as recited in claim 17, wherein the solely-bent baffle further comprises a torque member received in the second channel configuration.  
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19. A solely-bent baffle as recited in claim 18, wherein:

the torque member is spaced from the axis around which the solely-bent baffle may rotate so that the torque member is configured to urge the solely-bent baffle around the axis into a vertical orientation.

20. A solely-bent baffle as recited in claim 19, wherein:

each of the planar flow control sheet and the generally J-shaped channels and the bends is fabricated from stainless steel.

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21. A solely-bent baffle as recited in claim 18, wherein:

each of the planar flow control sheet and the generally J-shaped channels and the bends is fabricated from stainless steel;

each of the two linear sides is parallel to the axis around which the solely-bent  
10 baffle may rotate;

a first of the two linear sides being closer to the axis than a second of the two linear sides; and

the torque member is mounted adjacent to the second of the two linear sides.

15 22. A solely-bent baffle as recited in claim 16, wherein the hinge members define an axis around which the baffle may rotate, and wherein the baffle is configured to resist a force in the flow direction, wherein the force is applied by the liquid to the baffle and tends to rotate the baffle in a first direction around the axis, and wherein:

each of the planar flow control sheet and the generally J-shaped channels and  
20 the bends is fabricated from stainless steel; and

the solely-bent baffle further comprising a torque member mounted in the

second channel configuration that is defined by the portion of the planar sheet and by the respective one of the first channel sections integral with the respective one of the opposite linear sides and by the respective one of the second channel sections, the torque member being configured to rotate the baffle around the axis in a direction  
5 opposite to the first direction.

23. A baffle for controlling flow of a liquid in a flow path in a basin, the flow path defining a flow perimeter, the baffle comprising:

a planar sheet having a continuous edge corresponding to the flow perimeter,  
10 the continuous edge being configured with at least two linear sides and at least two linear ends;

a plurality of channels, each of the channels being solely-defined by channel sections and a series of bends integral with the channel sections, a first side channel of the channels being integral with a separate respective first one of the linear sides , a  
15 second side channel of the channels being integral with a separate respective second one of the linear sides, a first end channel of the channels being integral with a separate respective first of the linear ends, a second end channel of the channels being integral with a separate respective second of the linear ends, a first side bend of the bends being co-extensive and integral with the respective first side and being integral  
20 with a first side channel section, the first side channel section extending perpendicular to the sheet, a second side bend of the bends being co-extensive and integral with the respective second side and being integral with a second side channel section, the second side channel section extending perpendicular to the sheet, a first end bend of

the bends being co-extensive and integral with the respective first end and being integral with a first end channel section, the first end channel section being perpendicular to the sheet, a second end bend of the bends being co-extensive and integral with the respective second end and being integral with a second end channel  
5 section, the first end channel section being perpendicular to the sheet;

each of the first and second end channel sections being configured with a first hinge member of a hinge assembly, the first hinge members being configured to cooperate with a second hinge member to suspend the baffle in a vertical orientation for rotation around an axis defined by the hinge assembly; and

10 a torque member mounted on the second side channel to apply a restorative torque on the baffle, the restorative torque releasably restricting the flow of the liquid in the flow path and tending to move the baffle into the vertical orientation.

24. A method of manufacturing a blank, the blank being configured for  
15 fabrication into a baffle for releasing hydrodynamic flow of liquid in a basin along a flow path having a selected area defined by a flow path height and a flow path width, the method comprising the operations of:

providing a sheet fabricated from a particular material and having  
opposite sides, the opposite sides being configured with substantially equal first  
20 dimensions generally equal to the flow path height, the sheet of material having opposite ends, the opposite ends being configured with substantially equal second dimensions generally equal to the flow path width, a first one of the sides being

adjacent to a first one of the ends, the first side and the first end being in perpendicular relationship and intersecting to define the corner of the blank;

providing opposed first channel tabs fabricated from the particular material,  
each of the first channel tabs being configured with a first proximal edge integral with  
5 the first end along a first axis and extending from the first axis, each of the first  
channel tabs being configured with a first distal edge opposite to and parallel with the  
first proximal edge, each of the first channel tabs being configured with second and  
third axes each of which is parallel to the first axis and located between the respective  
first proximal edge and the first distal edge;

10 providing opposed second channel tabs fabricated from the particular material,  
the second channel tab being configured with a second proximal edge integral with the  
first side along a fourth axis, each of the second channel tabs being configured with a  
second distal edge opposite to and parallel with the respective second proximal edge,  
each of the second channel tabs being configured with fifth and sixth axes each of  
15 which is parallel to the respective fourth axis and perpendicular to the third axis and  
located between the respective second proximal edge and the respective second distal  
edge;

configuring each of the first channel tabs with a hinge member that defines a  
hinge axis, the hinge axis being closer the first side than to a second of the opposite  
20 sides.

25. A method as recited in claim 24, further comprising:

configuring the sheet and the tabs so that a weight of the sheet and the tabs on one side of the hinge axis exceeds the weight of the sheet and the tabs on an opposite side of the hinge axis.

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26. A method as recited in claim 25, wherein:

the configuration of the sheet and the tabs comprises mounting a torque member on the second channel tab having the second proximal edge that is further from the hinge axis than the other second channel tab; the torque member having a selected weight so that the combined weight of the torque member and of the sheet and of the tabs on the one side of the hinge axis provides a predetermined restorative torque around the hinge axis.

27. A method of releasing hydrodynamic flow of liquid in a basin by controlling a baffle, the method comprising the operations of:

mounting the baffle for movement relative to a vertical orientation;  
urging the baffle to remain substantially in the vertical orientation in response to normal process forces; and  
allowing the urging operation to be overcome by a hydrodynamic force that moves the baffle substantially from the vertical orientation.

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28. A method as recited in claim 27, further comprising the operation of:  
continuing the urging operation to restore the baffle to the vertical orientation after  
cessation of the hydrodynamic force.

5           29. A method as recited in claim 27, wherein the hydrodynamic force results  
from a seismic event and is uncontrolled, and the normal process forces are  
substantially less than the hydrodynamic force.

          30. A method as recited in claim 27, wherein:  
10           the mounting operation comprises mounting the baffle for rotation around a  
horizontal axis.

          31. A method as recited in claim 27, wherein:  
the urging operation comprises providing a torque member spaced from the  
15           horizontal axis and effective when the baffle is other than in the vertical orientation to  
urge the baffle substantially toward the vertical orientation.

          32. A method as recited in claim 27, wherein:  
the allowing operation comprises selecting a value of a torque member that is  
20           mounted on the baffle spaced from the horizontal axis, the torque member being  
effective when the baffle is other than in the vertical orientation to urge the baffle  
substantially toward the vertical orientation except in the event of the hydrodynamic

force, the selecting of the value rendering the torque member ineffective in response to the hydrodynamic force to urge the baffle substantially toward the vertical orientation so that in response to the hydrodynamic force the baffle rotates substantially from the vertical orientation and releases the hydrodynamic force.